

BOTANICAL NOTES ON THE FLORA OF NORTHERN THAILAND: 5¹

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ABSTRACT

Twelve taxa of vascular flowering plants are reported as new records for the flora of Thailand. This includes the genera *Actinostemma* Griff. (Cucurbitaceae), *Epilobium* L. (Onagraceae), and *Phytolacca* L. (Phytolaccaceae). Fruits of four other species are described along with the seeds of three of them.

SCHISANDRACEAE

Schisandra verrucosa Gagnep. NEW RECORD, FRUITS AND SEEDS DESCRIBED, figure 1

I reported this genus, viz. *S. perulata* Gagnep., as a new record for the flora of Thailand recently (MAXWELL, 1992). Now another species can be added, i.e. *S. verrucosa* Gagnep. which GAGNEPAIN (1938) described along with *S. perulata*. *Schisandra verrucosa* (Latin = warty, i.e. stems) was described from flowering material collected in Tonkin, N. Vietnam. I collected mature fruiting material of this species in Jae Sawn National Park, Lampang Province, below Bah Miang Village at 925 m on 30 November 1995 (Maxwell 95-1194). It was growing in a partly open, disturbed area in primary evergreen, seasonal, hardwood forest on granite bedrock.

Fruiting pedicels glabrous, pale light green, 7–22 mm long. Bract remnants often present, ovate, broadly rounded at the tip, c. 2 x 1.5 mm. Fruiting receptacles accrescent, glabrous, spike-like, pale light green, 24–70 mm long. Fruiting carpels (monocarps) sessile, spaced, globose (with 1 seed) or ellipsoid (2-seeded), slightly juicy, pale light green and later light orangish. c. 7–10 x 5–9 mm. Seeds slightly laterally compressed, subglobose and somewhat reniform, sides rounded; testa smooth; 6–7 x 5–6 mm. Hilum lateral, on the emarginate side.

Key to the two known species of *Schisandra* in Thailand:

1. Stems smooth, often angular; leaf blades elliptic to broadly ovate, up to 10 x 6 cm. *S. perulata* Gagnep.
1. Stems verrucose, always terete; leaf blades ovate–lanceolate, up to 19 x 6.5 cm. *S. verrucosa* Gagnep.

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RUTACEAE

Glycosmis pseudoracemosa (Guill.) Swingle NEW RECORD, figure 2

STONE (1985) notes that this species, described in 1912 from material collected in Tonkin, N. Vietnam, is also known from Kwangsi Province, southern China. It is distinguished by having unifoliate leaves with clearly articulated petioles, compact inflorescences which are as long as or slightly longer than the petioles (i.e. c. 5 mm long), and 5-locular ovaries.

I found flowering material (Maxwell 95-1291) of this species in the northern part of Jae Sawn National Park, Wahng Nua District, Lampang Province, at Pah Ngahm Station area at 650 m on 6 December 1995, and again near that locale at 600 m on 28 April 1996 (Maxwell 96-643). It was found in open, rugged limestone terrain in degraded deciduous forest with much bamboo and grows as a treelet or shrub 1.5-2 m tall in dense undergrowth.

Zanthoxylum evodiaefolium Guill. NEW RECORD, figure 3

This species is very appropriately named since the material, in fruit, that I found in Doi Chiang Dao Wildlife Sanctuary, has trifoliate, less frequently unifoliate leaves, that closely resemble those of *Euodia* (Rutaceae) that are alternate and not opposite as in the latter.

Described in 1945 from three collections from Annam in Vietnam, this species differs from all others in the region by having unifoliate or trifoliate leaves. The material that I found (Maxwell 95-1128) was growing near the east end of Doi Luang Valley in primary, evergreen, seasonal, hardwood forest in shaded, rugged limestone terrain at 1750 m and was collected on 9 November 1995.

It grows as an understorey tree 6-8 m tall with a dbh of 6-9 cm. The bark is thin, very coarsely roughened, tan, and with spine-tipped tubercles.

LEGUMINOSAE, Papilionoideae

Uraria poilanei Dy Phon NEW RECORD

Dy Phon (VAN THUAN et al., 1987) notes that this species is expected to be found in Thailand. It was described in 1987 based on material collected by E. Poilan in Xieng Khouang Province, Laos at 900 m in "mixed deciduous" forest on limestone bedrock.

I have made three collections of this species, all on granite bedrock, viz. two at Doi Kuhn Dahn National Park, Lampoon Province (Maxwell 93-1436, flowers, 22 November 1993 and 94-151, fruits, 31 January 1994) and in the southern part of Doi Chiang Dao Wildlife Sanctuary, Chiang Mai Province (Maxwell 95-1039, flowers, 3 November 1995). The two specimens from Doi Kuhn Dahn were made in the same place in degraded primary evergreen, seasonal hardwood forest at 1175 m, while the Chiang Dao one was collected at 925 m in disturbed, mixed evergreen + deciduous, seasonal hardwood forest with much bamboo. It grows as a deciduous herb-shrub 1-1.5 m tall (Chiang Dao) or as

an evergreen shrub 1.5–2.5 m tall (Doi Kuhn Dahn).

This species is distinguished by having glandular–sticky indumentum on most parts, trifoliolate leaves with relatively large leaflets, and “semi-lunar” pod segments. It is very closely related to *U. lacei* Craib (type Burma) which is known from northern Thailand, Burma, southern China, Laos, and Vietnam. *Uraria lacei* lacks glandular indumentum, has smaller leaflets, and more rectangular pod segments.

CUCURBITACEAE

Actinostemma tenerum Griff. NEW GENERIC AND SPECIES RECORD, figure 4

Griffith established this genus and described this species in 1837 based on material from East Bengal. The genus is distinguished by having 5, equal, unilocular, free stamens; small, circumscissile (pyxidium) fruits; and exalate, compressed, denticulate seeds.

I have collected this species twice, both staminate, on the eastern lowlands of Doi Chiang Dao Wildlife Sanctuary, Chiang Mai Province (Maxwell 89-1540, 800 m, 16 December 1989) in mixed evergreen + deciduous, seasonal, hardwood forest at the base of the limestone escarpment and (Maxwell 95-845, 550 m, 7 October 1995) in an open thicket with much secondary growth in similar forest, but on shale bedrock.

This species is a vine with very polymorphic leaf blades ranging from ovate to suborbicular with acute to deeply cordate bases, and ranging in size from 7.5–20 cm long x 3.5–1.7 cm wide, with petioles 2–8.5 cm long. According to KERAUDREN-AYMONIN (1975) *A. tenerum* ranges from NE India, China, Japan, Korea, Taiwan, and N. Vietnam.

Momordica laotica Gagnep. NEW RECORD

According to the most recent regional revision of the Cucurbitaceae (KERAUDREN-AYMONIN, 1975) this species is endemic to Laos. Gagnepain described this species in 1918 based on staminate material collected in Louang Prabang which, apparently, is the only material known.

I found staminate material of this species (Maxwell 95-736) at Jae Sawn National Park, Muang Bahn District, Lampang Province on 23 September 1995 in an open, disturbed area in degraded, fire-prone, seasonal, deciduous forest with much bamboo on granite bedrock.

It differs slightly from *M. subangulata* Bl., which is known from India, Indo-China, Peninsular Malaysia, and Java; in having slight morphological differences in the bracts and sepals.

MELASTOMATACEAE

Osbeckia stellata Ham. ex Ker-Gawl. var. *rostrata* (D. Don) C. Han. NEW RECORD, figure 5

This variety has a long taxonomic history and numerous synonyms (HANSEN, 1977). It was originally described as *Osbeckia rostrata* D. Don in 1825 on material from Nepal. It is known from the Himalayas, India, Burma, Laos, and S. Vietnam.

Osbeckia stellata has five varieties, three of which are found in northern Thailand, viz. var. *crinita* (Bth. ex Naud.) C. Han. and var. *marginulata* (Wall. ex Cl.) C. Han., both of which are common, and now var. *rostrata*, which I know from only one place.

Var. *rostrata* is very common in Doi Chiang Dao Wildlife Sanctuary, Chiang Mai Province in the vicinity between Huay Mae Gawk Station and the west side of Doi Luang—the limestone massif. I collected flowering material of var. *rostrata* at 1475 m on 1 September 1995 in seasonal, mixed evergreen hardwood+pine forest on granite bedrock (Maxwell 95-658). Simon Gardner also collected this variety (Gardner H 137) in similar forest on shale bedrock at 1150 m on 6 December 1995 slightly west of where I got it. It is a deciduous, perennial herb 1–1.5 m tall which differs from var. *marginulata*, which is found at lower elevations (c. 650–1250 m) in the area, in being nearly glabrous throughout. Var. *crinita*, found in evergreen hardwood + pine forest from 1225–1900 m and sympatric with var. *rostrata*, differs in having hispid indumentum on most parts and flowers in October–November, i.e. when var. *rostrata* is fruiting.

ONAGRACEAE

Epilobium brevifolium D. Don ssp. *trichoneurum* (Hauss.) Raven NEW GENERIC AND SSP. RECORD, figure 6

According to RAVEN (1977) this taxon is found throughout SE Asia and Philippines but not, apparently, Thailand. I found mostly fruiting material of ssp. *trichoneurum* (Greek: small hairs on the nerves) in the upper valley just below the summit of Doi Luang in Doi Chiang Dao Wildlife Sanctuary, Chiang Mai Province at 1950 m on 7 November 1995 (Maxwell 95-1097). It is found in former primary evergreen, seasonal, hardwood forest which has been cleared for opium cultivation and is now overgrown with *Eupatorium adenophorum* Spreng. (Compositae) in rugged limestone terrain. Ssp. *trichoneurum* must be relatively new to Thailand since CRAIB (1931) and SMITINAND (1966) do not include it or the genus *Epilobium* in their enumerations. Although most of the plants found were in fruit, a few had their last flowers which enabled me to identify them. It is an annual herb and is presently very common in the area in which I found it. GAGNEPAIN (1921), as *E. trichoneuron* Hauskn., gives a complete description as well as a plate.

ASCLEPIADACEAE

Heterostemma gracile Kerr FRUITS AND SEEDS DESCRIBED

Kerr (1939) described this species from his own collection (Kerr 6535) made on Doi Chiang Dao (Wildlife Sanctuary, Chiang Mai Province) at 1400 m in November 1922. I collected fruiting material of this species at 1750 m on 9 November 1995 (Maxwell



Figure 1. *Schisandra verrucosa* Gagnep. (Schisandraceae)

This is the second species of this genus known in Thailand. Gagnepain (1938) includes four species for Indo-China, the fifth, *S. crassifolia* Pierre ex Fin. & Gagnep. = *Kadsura heteroclita* (Roxb.) Craib (Schisandraceae) (Keng, 1972). Photo: Siriporn Kopachon.



Figure 2. *Glycosmis pseudoracemosa* (Guill.) Swingle (Rutaceae)

Including this species and according to Stone (1985) there are now 13 species of this genus known from Thailand. Photo: Siriporn Kopachon.

Figure 3. *Zanthoxylum evodiaefolium* Guill.
(Rutaceae)

According to Craib (1926) there are five other species of this genus in Thailand of which only *Z. acanthopodium* DC. is also known from Doi Chiang Dao. Photo: Siriporn Kopachon.

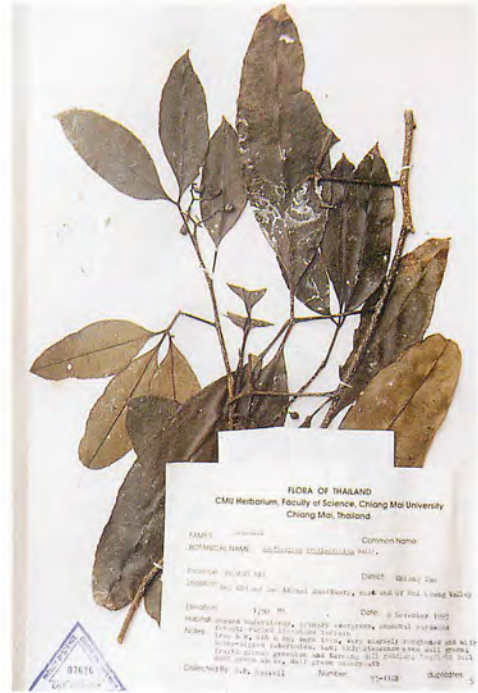


Figure 4. *Actinostemma tenerum* Griff.
(Cucurbitaceae)

This species, as far as I am aware, is only known from staminate material from Doi Chiang Dao in Thailand. It also might be present in unidentified or misidentified herbarium material. Female and fruiting material, therefore, must be present there, albeit difficult to find. Photo: Siriporn Kopachon.

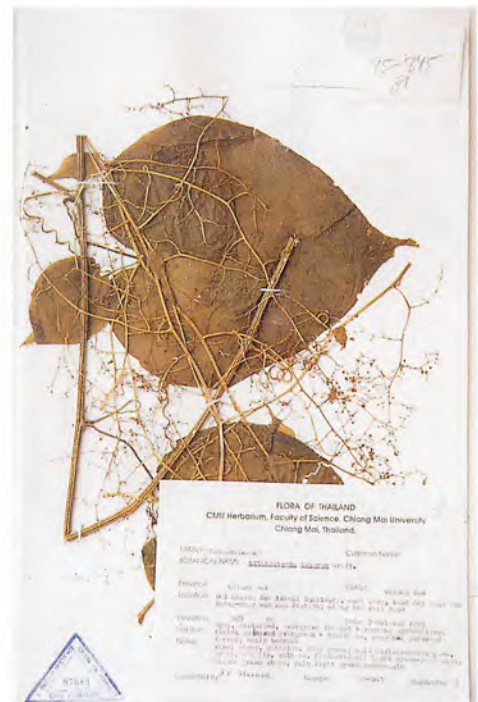




Figure 5. *Osbeckia stellata* Ham. ex Ker-Gawl. var. *rostrata* (D. Don) C. Han. (Melastomataceae)

The three known varieties of *O. stellata* are not only readily distinguished morphologically, but also have different phenologies as well as some habitat differences. Photo: Siriporn Kopachon.



Figure 6. *Epilobium brevifolium* D. Don ssp. *trichoneurum* (Hauss.) Raven (Onagraceae)

This species has established itself only recently in Thailand, most probably from southern China. Photo: Siriporn Kopachon.

Figure 7. *Phytolacca americana* L. (Phytolaccaceae)

This species, also recently established in Thailand, is quite rare on Doi Chiang Dao, but might also be found in other upland areas in northern Thailand. Photo: Siriporn Kopachon.



Figure 8. *Ficus nervosa* Hey. ex Roth var. *nervosa* (Moraceae)

Since the proper identification of many species of *Ficus* is quite difficult, there might be unidentified or incorrectly identified specimens of this taxon in other herbaria. Photo: Siriporn Kopachon.



95-1124) in a partly open area in seasonal, primary evergreen hardwood forest in rugged limestone terrain from the same area that Kerr did. Kerr's material was flowering, thus the fruits can be described here.

Follicles spreading at 180° or more to the pedicel, terete, glabrous, dark green, gradually narrowed to the acute tip, 67-103 x 3.5-4 mm. Seeds linear, flat, brown, 15 x 1.5 mm. Coma silky, white, about as long as the seed.

This species is readily distinguished from other species in this genus by its membranous leaf blades which are acute at the tip and acute to rounded at the distinctly 3-plinerved base. The largest blades on my material are 12 x 8 cm which are slightly larger than Kerr described (11 x 6.3 cm). As far as I know, this species is only known from where Kerr and I collected it.

Periploca purpurea Kerr FRUITS AND SEEDS DESCRIBED

This species was described in 1938 from flowering material that Kerr (5576) collected in early June 1921 from c. 1600 m in open evergreen forest on Doi Chiang Dao (Kerr, 1938). The species was fruiting on 9 November 1995 when I collected it (Maxwell 95-1138) at 1775 m in primary evergreen, seasonal, hardwood forest in rugged limestone terrain in the same area that Kerr must have found it, i.e. the valley below Doi Luang. Fortunately, one specimen had a few flowers, undoubtedly the last of the rainy season, thus I was able to identify it. It is a woody climber with a basal diameter of 3.5 cm. The bark is thin, peeling and roughened, blackish; white latex is abundant.

Follicles paired, spreading at c. 45° (i.e. "V"-like), straight, uniformly cylindrical, slightly narrowed at the tip, finely striate when dry, glabrous, green, 9-12 cm x 4 mm. Seeds linear, 3-angled, truncate at the tip, acute at the base; funicular scar a distinct, medial line on one side for almost the entire length of the seed, glabrous, blackish (6-) 12-14 x 1.5-1.75 mm. Coma silky, white, 30-35 mm long.

Vegetatively this species is distinguished by its relatively small, linear-lanceolate leaf blades with a prominently acuminate tip and fine intramarginal nerve. As with *Heterostemma gracile* Kerr, *P. purpurea* is only known, as far as I can determine, from the type locality. Subsequently I collected the first flowering material of the year of this species on the summit area of Doi Nahng, which is adjacent to Doi Luang, at 1650 m on 18 March 1996 (Maxwell 96-390).

PHYTOLACCACEAE

Phytolacca americana L. NEW GENERIC AND SPECIES RECORD, figure 7

LARSEN (1992) notes that the genus *Phytolacca* L. has yet to be recorded from Thailand. Two species, viz. *P. americana* L. and *P. acinosa* Roxb. are, however, known from Indo-China (LARSEN, 1989).

I found flowering material of *P. americana* in Doi Chiang Dao Wildlife Sanctuary, Chiang Mai Province at the east end of Doi Luang Valley at 1750 m on 8 November 1995 (Maxwell 95-1122). It was growing in thin soil on rugged limestone terrain in a shaded

place in degraded, primary evergreen, seasonal hardwood forest as an erect, branching, succulent herb 1.5 m tall. From my observations it seems to be an annual herb and quite rare.

Phytolacca americana, originally from North America, is now found throughout much of the world. According to LARSEN (1989) it is cultivated in temperate areas for its fruits which are used to colour wine and also for medicinal purposes by people in Laos and Vietnam. Its presence on Doi Chiang Dao would seem to be due to bird dispersal from Indo-China.

LORANTHACEAE

Helixanthera pierrei Dans. NEW RECORD

Danser (1938) described this species and indicated that it is known only from material collected by Pierre in Tpong Province, on the western coast of Cambodia at 1500 m. It is distinguished by having distinct fibers at broken points; 5-merous, sessile flowers; and styles which reach the base of the anthers. The gibbous, cupular, suborbicular bracts are also distinct.

I found flowering material of this species near Mae Mawn Village in Jae Sawn National Park, Muang Bahn District, Lampang Province, at 850 m elevation in mixed evergreen + deciduous, seasonal, hardwood forest on 17 February 1996 (Maxwell 96-258). It was growing on older stems of *Rourea minor* (Gaertn.) Leenh. ssp. *minor* (Connaraceae), an evergreen woody climber, in a partly shaded area below the forest canopy. The following notes supplement Danser's description. Shrub with stems/branches up to c. 1 m long; oldest stems dull blackish, younger ones light green and turning grey. Inflorescence axes, bracts, calyx dull greenish and dull reddish, turning dull red. Petals dull red, anthers dull dark red; leaf blades dark glossy green above, bright light green underneath.

Danser appropriately named this species in honour of Jean Baptiste Louis Pierre (1833-1905), a famous and prolific French botanist.

MORACEAE

Ficus nervosa Hey. ex Roth var. *nervosa* NEW RECORD, figure 8

CORNER (1965) notes that this variety is found in Sri Lanka, India, Burma, China, Hong Kong, Taiwan, and Vietnam. GAGNEPAIN'S (1928) description and illustrations confirm the identification of Maxwell 95-1278 from Jae Sawn National Park, Muang Bahn (Pan) District, Lampang Province. It was collected in an open area along a stream at Mae Mee Nawk (Karen) Village at 550 m on 4 December 1995 in very degraded, fire-prone, deciduous forest with much bamboo on shale bedrock.

The specimens were from a tree 15 m tall, ddh 50 cm, with thin, smooth, grey bark and sparse white latex. The species is immediately recognized by its axillary, smooth, glabrous, globose figs 1.5-2 cm diameter which are on peduncles 5-7 mm long. The

bracts, which are inserted at the base of the peduncle, are sheathing, 2-lobed to the middle, and c. 1.5 mm long. Unlike most other species of *Ficus* in Thailand, the absence of bracts at the base of the figs of *Ficus nervosa* is quite diagnostic. The closely reticulate (i.e. nervose) tertiary venation on the leaf blades is also characteristic and recalls the basic pattern found in many species of *Artocarpus* (Moraceae).

The other variety of this species, var. *minor* King, is found in Sri Lanka and peninsular India.

DIOSCOREACEAE

Dioscorea velutipes Pr. & Burk. FRUITS DESCRIBED

PRAIN & BURKILL (1927, 1934) described this species in 1914 based on male and female flowering material collected in the Southern Shan States of Burma. A male specimen was collected by Kerr (5581) in June 1921 (at 1600–1800 m) and by Banzinger (637 at 1530 m) on 15 July 1990, both in rugged limestone terrain in Doi Chiang Dao Wildlife Sanctuary, Chiang Mai Province.

I collected fruiting material of this species (Maxwell 95-1075) on 5 November 1995 at 1625 m elevation in the rugged limestone valley below Doi Luang in Doi Chiang Dao Wildlife Sanctuary in an open, fire-damaged, former evergreen, seasonal hardwood forest which was cleared for opium cultivation and is now overgrown with weeds and secondary growth.

Infructescences racemose, pendulous, 37–56 cm long; axes very finely and sparsely puberulous, glabrescent, slightly angular, green. Pedicels solitary, 20–35 mm apart, reflexed, 5–6 mm long. Bracteoles 2, inserted at different levels near the middle of the pedicel, adpressed, narrowly triangular, to 1.5 x 0.5 mm. Capsules elliptic, broadly emarginate at the tip, truncate at the base, glabrous, green; overall size (including wings) 22–23 x 30–32 mm. Seeds immature.

Vegetatively this species is easily recognized by its simple leaves with leaf blades which are acuminate at the tip, deeply cordate at the base, and conspicuous, fine, persistent pubescence on the undersurface. A male collection (Maxwell 95-1073) was made in the same place as the fruiting material. Finally, the original dimensions of up to 9 x 5 cm for the leaf blades can be increased to 15 x 10 cm with the petioles up to 9 cm long.

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